Case Report

Late-Onset Bleb-Related Endophthalmitis Following Extracapsular Cataract Extraction

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Abstract

Bleb-related infective endophthalmitis is an uncommon but serious complication more commonly associated with glaucoma-filtering surgery. However, blebs can also result from other intraocular surgery, including extracapsular cataract extraction (ECCE) surgery. This report illustrates a case of infective endophthalmitis from an extracapsular cataract extraction bleb. Immediate treatment with intravitreal antibiotics is essential, but may still result in a poor visual outcome.

Keywords: Bleb-related infection, diabetes mellitus, endophthalmitis, extracapsular cataract extraction, vitrectomy

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Introduction

Blebs are typically seen following glaucoma filtration surgery but can also occur with other intraocular surgery. Successful glaucoma surgery normally results in a diffuse, elevated bleb over the superior conjunctiva. Unfortunately, blebs can be associated with sight-threatening complications. Thin-walled and cystic blebs that leak are at risk of developing bleb-related infection. Endophthalmitis occurs when the infection spreads from the bleb outside to the posterior segment inside the eye. We hereby report a case of delayed infective endophthalmitis related to an old extracapsular cataract extraction bleb.

Case Report

A 54-year old lady presented to Eye casualty with a one-day history of pain, stickiness, and visual loss in the left eye. She was obese, and had poorly controlled type 2 diabetes mellitus and asthma.

Twelve years earlier, due to cataract from her diabetes, she had left followed by right uncomplicated extracapsular cataract extraction (ECCE). However, there was no record in the surgical notes with regards to the intraoperative details. Nasally located ECCE wound blebs were noted 3 years after surgery. At that time, she was noted to have moderate keratoconus bilaterally, but was unable to tolerate contact lenses in her right eye. She subsequently had uncomplicated right penetrating keratoplasty.

Ten years after her ECCE procedures, she had presented to eye casualty with burning sensation in both eyes. The ECCE wound blebs were noted to be thin-walled, but had no leak. The anterior chambers were quiet. Conjunctival swabs cultured *Haemophilus influenzae*, and her symptoms settled following a course of topical ofloxacin. Following that episode, she was under yearly review in view of her thin blebs and the potential risk of bleb-related infection.

On examination at presentation, her right visual acuity (VA) was 6/9 corrected, but in her left, it was only counting fingers (CF) at 2 metres. The right eye was quiet with a non-leaking, thin, cystic, nasally located ECCE bleb. The left eye had 1mm hypopyon and strong cellular and fibrinous reaction in the anterior chamber. The ECCE bleb was thin and cystic, but there was no leak. (Figure 1) The fundal view was poor, but there was a good red reflex.

A provisional diagnosis of bleb-related infective endophthalmits was made, and she was admitted. After conjunctival swabs were taken, anterior chamber and vitreous taps with intravitreal injection of vancomycin 1mg in 0.1 ml and amikacin 0.4 mg in 0.1 ml were performed under subtenon anaesthesia as per the department protocol. She was started on oral ciprofloxacin, topical ofloxacin 0.3% one-hourly, topical prednisolone 0.5% qds, and topical atropine 1%. Gram stain of the anterior chamber tap showed pus cells but no organisms, while the vitreous tap revealed gram-positive cocci.

The next day, the patient was subjectively more comfortable. However, her vision had decreased to perception of light (PL), with an increase in fibrin and loss of red reflex. Culture of the vitreous tap grew *Enterococcus faecalis*, which was sensitive to chloramphenicol, gentamicin, ampicillin, and vancomycin. Her oral and topical antibiotics were changed to ampicillin, and one-hourly topical gentamicin 0.3% respectively.

The following day, the left VA remained at PL, and intravitreal vancomycin 1 mg in 0.1 ml was repeated, as well as additional subconjunctival vancomycin 2 mg. Five days after the second intravitreal vancomycin injection, her vision improved to hand movement (HM), and she was discharged on oral ampicillin, topical gentamicin forte two-hourly, topical prednisolone forte two-hourly, and topical atropine 1%. She was reviewed in outpatients 5 more times over one month, and while the anterior chamber activity quietened, her left VA remained at HM with significant vitreous debris and haze. She was therefore listed for left vitrectomy under subtenon anaesthesia.

Two months after presenting with bleb-related endophthalmitis, she had left vitrectomy and epiretinal membrane peel. During the procedure, an iatrogenic inferotemporal retinal break with retinal detachment occurred, and this was corrected with endolaser and silicon oil. Two months post-vitrectomy, the fundal view was clear, with flat retina, mild to moderate non-proliferative diabetic retinopathy and a few non-foveal

Figure 1: Thin cystic wound bleb in the left eye.

macular haemorrhages. The intraocular inflammation had settled, but her left VA had improved to only CF.

Discussion

Wound blebs are uncommon complications of extracapsular cataract extraction (ECCE). It is therefore difficult to determine the incidence of bleb-related infection from ECCE wound blebs. In a retrospective study of glaucoma surgery patients who subsequently developed delayed-onset bleb-related endophthalmitis, the commonest causative organisms were found to be the *Streptococcus* (31%) and *Staphylococcus* (22%) species (1).

There are currently no treatment recommendations for the management of late-onset bleb-related infective endophthalmitis. Initial conjunctival swab, anterior chamber tap, and vitreous tap should be performed to identify the causative organism and its antimicrobial sensitivities. Immediate empirical treatment with intravitreal broad-spectrum antibiotics (in this case, vancomycin and amikacin for gram positive and negative microorganisms respectively) ensures antimicrobial activity in the vitreous. There is no evidence yet for the role of intravitreal steroids. In our patient, intravitreal vancomycin was repeated because there was no objective improvement after 48 hours.

Intensive topical quinolones, either alone or in combination with other antimicrobials, such as cephalosporin or aminoglycosides, are commonly used for bleb infections. These achieve therapeutic levels in the anterior chamber, and complement the intravitreal antibiotics. The Endophthalmitis Vitrectomy Study (EVS) showed no benefit from systemic antibiotics (ceftazidime and amikacin) (2). However, oral quinolones have been found to achieve therapeutic vitreous levels but their role is still open to debate. In this patient, the antibiotic regime was changed because

there was objective worsening, and also in accordance to the microbial sensitivities.

In this instance, it is unclear as to the optimal timing for vitrectomy. There may be an argument for vitrectomy as soon as the vision dropped to light perception as prompt vitrectomy for bleb-associated endophthalmitis may be associated with a better visual outcome (2). The EVS only looked at acute postoperative infective endophthalmitis within 6 weeks after cataract surgery, and recommends immediate vitrectomy in patients who present with light perception vision only, and so its findings are not entirely applicable to this case. A subgroup analysis of the EVS for diabetic patients with presenting vision of better than light perception showed no statistical difference in visual outcomes between immediate vitrectomy or vitreous tap (3).

Reduction of risk factors for bleb-related infection is important, especially in our patient who already had a prior episode of bacterial conjunctivitis, and had 2 risk factors: poorly controlled diabetes, and nasally located thin blebs. General measures should include education regarding the symptoms of bleb-related infection; and advice to seek ophthalmic consultation without delay when these occur. Regular lid hygiene may reduce the risk of infection in the presence of blepharitis. Some ophthalmologists provide topical antibiotics to be used at home for early symptoms. However, literature does not support the use of long-term antibiotic prophylaxis.

This case highlights management difficulties for late-onset bleb-related infective endophthalmitis. It is uncertain as to whether her visual prognosis would change if vitrectomy had been performed earlier, as *Enterococcus faecaelis* endophthalmitis is usually associated with poor visual outcome (4). Moreover, the visual outcome for infective endophthalmitis tends to be worse in patients with diabetes (5). It is therefore important for our patient now to maintain excellent glycaemic control to reduce the risk of infection in the unaffected eye.

This report illustrates a case of late infective endophthalmitis from an extracapsular cataract extraction bleb. Immediate treatment with intravitreal antibiotics is essential, but may still result in a poor visual outcome.

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